COE Proposal for Spring Priorities 2001

Premises:

IT and TMT will shift the thought process: Prepare for the worst and strive to do better.

Assume that upper basin storage projects will not refill in 2001.
Assume that seasonal spring and summer flow objectives will not be met.

IT and TMT will plan for 1977 conditions. Then, if water supply allows for flows above the 1977 levels, utilize the added volume to meet fish and power system needs.

Additional water over 1977 conditions will allow for a successful operation.

This proposal is consistent with the Regional Federal Executives' desires to put operations back where they belong: to the IT/TMT. In order to meet the desires of the Federal Executives, the TMT must be given some flexibility to make operational recommendations to the Action Agencies.

In the model runs performed for low water supply conditions during the consultation process, the headwater projects operated to minimum outflow during the April through June period as the projects refilled. In the regulations by the Corps, headwater projects are operated on minimum flow in the April through June period. This operation provides no flexibility to meet fish needs (put flow on fish) in April through June. Likewise, there is no flexibility to meet power generation needs during the February through April time frame.

HYSSR Modeling:

Two system conditions were modeled, CORPS 1977 and EXECUTIVE. Assumptions for both runs were:

1. Used 1977 as the historic water year for 60-year model runs: 1977 was about 53 MAF, 50% of average as measured at The Dalles for the January through July period.
2. Used the Q-Adjust method of running the same water supply shaped for each of the 60 historic water years. i.e. each of the 60 years had exactly the same volume for the January through July period, but each shape was proportionally the same as a historic water year.
3. The volume was shaped from February 1 through August 31. (1977 February through July volume)
4. All projects were initialized at observed February 1 elevations.

CORPS 1977:

1. Grand Coulee drafted to elevation 1225 feet in February through April to meet 130 kcfs at Bonneville Dam during those periods.
2. Canadian projects were fixed to expected operations through August.
3. Libby, Hungry Horse, and Dworshak were operated to minimum flow for the February through June period: Libby at 4 kcfs; Hungry Horse at 2.8 kcfs in February through March and 720 cfs April through June; Dworshak at 1.3 kcfs February through June.

General Results (more detailed results are attached):

- Grand Coulee filled to elevation 1284.1 feet on average by the end of June, with a range of 1266.4 to 1290.0 feet.
- Dworshak filled to elevation 1575.9 feet by the end of June, with a range of 1570.554 to 1579.3 feet.
- Libby filled to elevation 2443 feet by the end if June, with a range of 2435.4 to 2449.6 feet.
- Hungry Horse filled to elevation 3540 feet by the end of June, with a range of 2534.2 to 3543 feet.

- Flow at Lower Granite averaged 35, 44, and 40 kcfs from the last half of April though June. The variation around the flow at Lower Granite was largest in June, where the highest flow in June was 66 kcfs.
- Flow at Priest Rapids averaged 64, 18, and 20 kcfs in the last half of April through June. Flow was low in May and June as Grand Coulee refilled. In many of the shaped years, a flow of 65 kcfs was not met at Priest Rapids in March and the first half of April.
- Flow at McNary averaged 108, 75, and 74 kcfs from the last half of April through June, where the flow decreased in May and June as Grand Coulee refilled.

EXECUTIVE:

1. Grand Coulee drafted to elevation 1225 feet in February through April to meet 130 kcfs at Bonneville Dam during those periods.
2. Canadian projects were fixed to expected operations through August.
3. Libby operated at 15 kcfs through end of March, then 4 kcfs through end of June.
4. Hungry Horse at 5 kcfs through end of March, then 720 cfs through end of June.
5. Dworshak operated to 1.3 kcfs minimum flow for the February through June period.

General Results (more detailed results are attached):

- Grand Coulee filled to elevation 1285.7 feet on average by the end of June, with a range of 1267.5 to 1290.0 feet. (about 1 foot higher than CORPS 1977)
- Dworshak filled to elevation 1575.9 feet by the end of June, with a range of 1570.4 to 1579.3 feet. (same as CORPS 1977)
- Libby filled to elevation 2410.6 feet by the end if June, with a range of 2401.5 to 2418.6 feet. (30+ feet lower than CORPS 1977)

- Hungry Horse filled to elevation 3527.9 feet by the end of June, with a range of 3522.1 to 3531.2 feet. (about 12 feet lower than CORPS 1977)

- Flow at Lower Granite averaged 35, 44, and 40 kcfs from the last half of April though June. The variation around the flow at Lower Granite was largest in June, with the highest flow in June was 66 kcfs.
- Flow at Priest Rapids averaged 66, 19, and 21 kcfs in the last half of April through June. Flow was low in May and June as Grand Coulee refilled. In many of the shaped years, a flow of 65 kcfs was not met at Priest Rapids in March and the first half of April.
- Flow at McNary averaged 110, 75, and 75 kcfs from the last half of April through June, where the flow decreased in May and June as Grand Coulee refilled.

- For each reference point, resultant flows were similar or the same for the two model conditions.

Corps Proposal:

1. Operate Dworshak to elevation 1580 feet at the end of June. This represents 358 KAF in the top 20 feet. This offers some operational flexibility and up to 1,800 cfs additional flow in the April through June period.

2. Operate Libby to elevation 2449 feet at the end of June. This represents 456 KAF, or about 2,500 cfs in spring.

3. Operate Hungry Horse to elevation 3540 feet at the end of June. This provides up to 455 KAF, also 2,500 cfs of flexibility.

4. Operate Grand Coulee to elevation 1285 feet at the end of June. This represents 403 KAF, or about 2,200 cfs flexibility in April through June.

5. Overall, operate headwater projects to 5 to 20 feet down from full at the end of June. Use these as lower limits as long as the water supply forecast remains above the 1977 level. If the water supply forecast remains slightly above 53 MAF, the TMT should strive to have the headwater projects above the limits described.

TMT Role:

The TMT's role in 2001 will be to take the priorities set by IT and manage the flexibility that may result from implementing this proposal.

Elevation Summary

Grand Coulee

CORPS 1977

		FEB	MAR	AP1	APR	MAY	JUN	JUL	AG1	AUG
CORPS	Max	1230.3	1228.8	1239.8	1257.7	1280.0	1290.0	1285.0	1282.5	1280.0
CORPS	Ave	1225.4	1225.1	1227.8	1233.1	1261.8	1284.1	1282.4	1282.5	1280.0
CORPS	Min	1225.0	1225.0	1225.0	1225.0	1243.3	1266.4	1269.9	1282.5	1280.0

EXECUTIVE

		FEB	MAR	AP1	APR	MAY	JUN	JUL	AG1	AUG
EXEC	Max	1237.4	1246.2	1252.2	1256.3	1280.0	1290.0	1285.0	1282.5	1280.0
EXEC	Ave	1226.4	1225.4	1229.4	1233.3	1264.3	1285.7	1282.6	1282.5	1280.0
EXEC	Min	1225.0	1225.0	1225.0	1225.0	1243.3	1267.5	1271.4	1282.5	1280.0

Dworshak

CORPS 1977

		FEB	MAR	AP1	APR	MAY	JUN	JUL	AG1	AUG
CORPS	Max	1522.0	1540.6	1551.5	1565.8	1578.0	1579.3	1523.6	1520.0	1520.0
CORPS	Ave	1509.8	1515.5	1522.7	1533.4	1561.3	1575.9	1523.1	1520.0	1518.3
CORPS	Min	1503.9	1501.7	1505.7	1510.7	1541.3	1570.4	1523.0	1520.0	1517.6

EXECUTIVE

		FEB	MAR	AP1	APR	MAY	JUN	JUL	AG1	AUG
EXEC	Max	1522.0	1540.6	1551.5	1565.8	1578.0	1579.3	1523.6	1520.0	1520.0
EXEC	Ave	1509.8	1515.5	1522.7	1533.4	1561.3	1575.9	1523.1	1520.0	1518.3
EXEC	Min	1503.9	1501.7	1505.7	1510.7	1541.3	1570.4	1523.0	1520.0	1517.6

Libby

CORPS 1977

		FEB	MAR	AP1	APR	MAY	JUN	JUL	AG1	AUG
CORPS	Max	2404.1	2402.1	2404.0	2413.9	2437.0	2449.6	2449.8	2452.1	2453.6
CORPS	Ave	2402.1	2398.3	2397.5	2399.4	2419.0	2443.0	2449.8	2449.5	2448.3
CORPS	Min	2401.0	2395.8	2393.6	2392.6	2403.6	2435.4	2449.7	2448.1	2445.7

EXECUTIVE

		FEB	MAR	AP1	APR	MAY	JUN	JUL	AG1	AUG
EXEC	Max	2384.6	2356.7	2358.8	2372.9	2403.4	2418.6	2422.0	2425.6	2428.9
EXEC	Ave	2382.1	2351.3	2350.3	2352.9	2379.6	2410.6	2421.8	2423.0	2423.3
EXEC	Min	2380.2	2347.3	2344.3	2343.7	2358.9	2401.5	2421.3	2421.5	2420.6

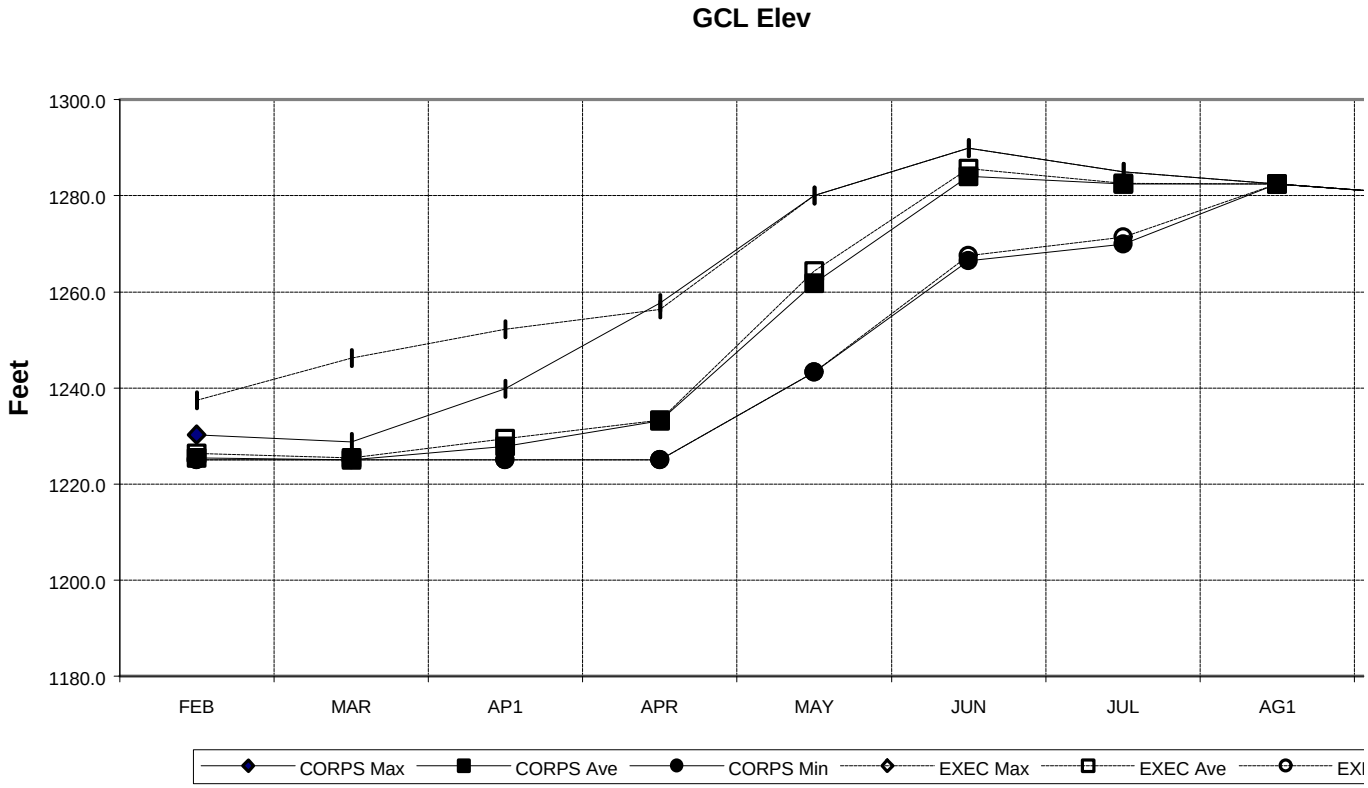
Hungry Horse

CORPS 1977

		FEB	MAR	AP1	APR	MAY	JUN	JUL	AG1	AUG
CORPS	Max	3506.7	3504.6	3508.9	3516.1	3535.9	3543.0	3543.6	3544.5	3544.8
CORPS	Ave	3503.6	3496.4	3498.1	3502.8	3523.4	3540.0	3543.6	3543.8	3543.8
CORPS	Min	3502.4	3493.5	3493.5	3494.3	3507.6	3534.2	3543.4	3543.3	3543.0

EXECUTIVE

		FEB	MAR	AP1	APR	MAY	JUN	JUL	AG1	AUG
EXEC	Max	3500.3	3489.9	3494.9	3502.7	3523.8	3531.2	3531.8	3533.3	3534.1
EXEC	Ave	3496.8	3481.1	3482.8	3488.0	3510.4	3527.9	3531.7	3532.5	3533.0
EXEC	Min	3495.2	3477.8	3477.8	3479.0	3493.4	3522.1	3531.4	3531.7	3532.0


GCL Elev
Feet
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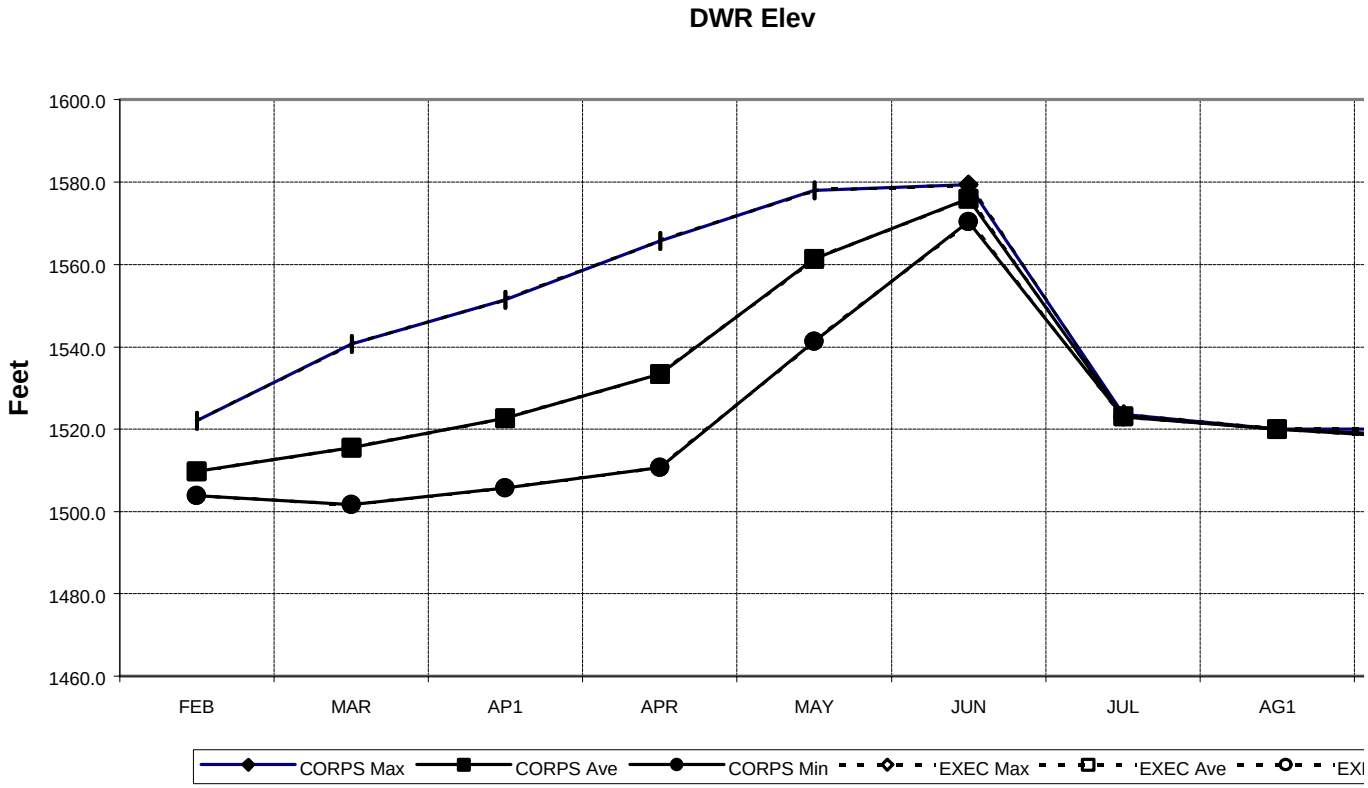
1280.0
1260.0
1240.0
1220.0
1200.0
1180.0
FEB
MAR
AP1
APR
MAY
JUN
JUL
AG1
CORPS Max
CORPS Ave
CORPS Min
EXEC Max
EXEC Ave


DWR Elev
Feet
1600.0
1580.0
1560.0
1540.0
1520.0
1500.0
1480.0
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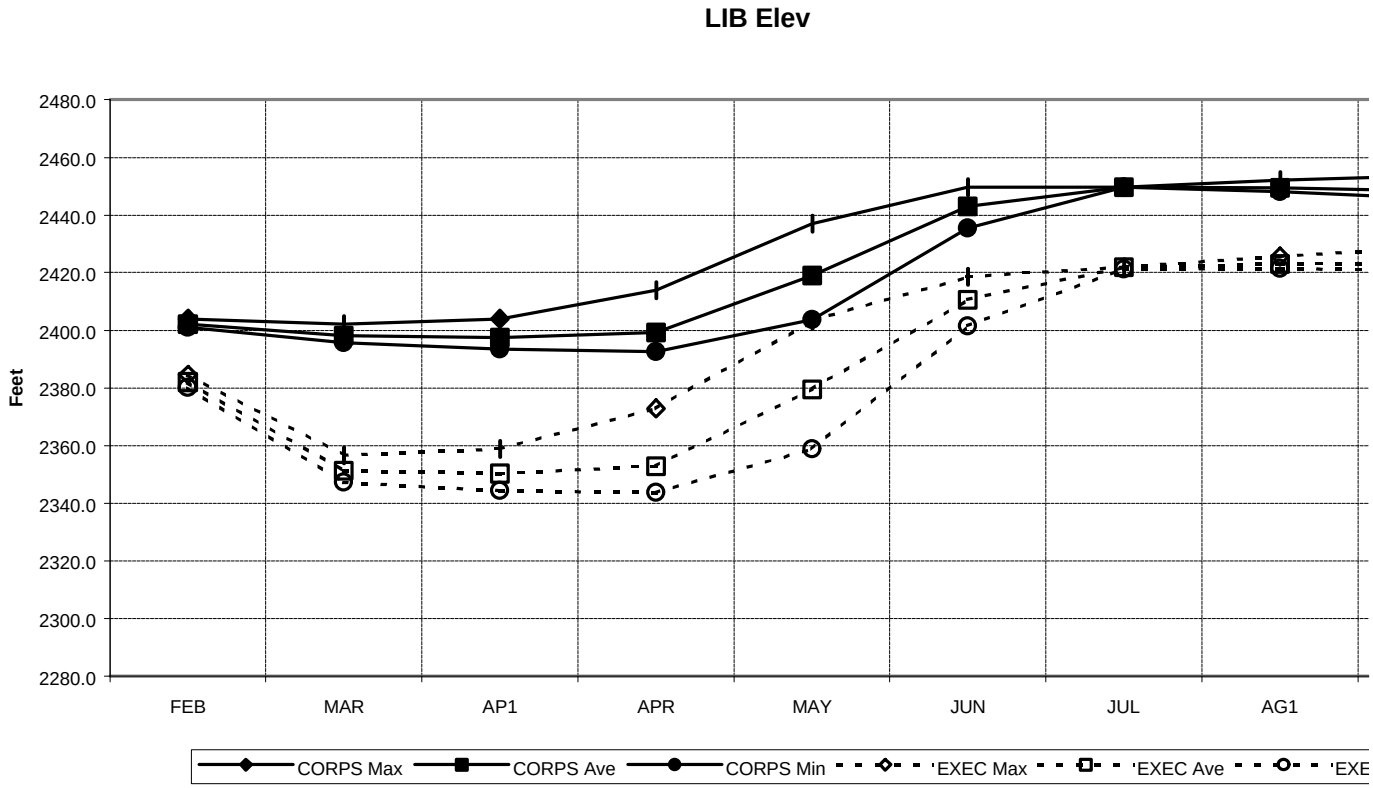
FEB
MAR
AP1
APR
MAY
JUN
JUL
AG1
CORPS Max
CORPS Ave
CORPS Min
EXEC Max
EXEC Ave


LIB Elev
Feet
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2460.0
2440.0
2420.0
2400.0
2380.0
2360.0
2340.0
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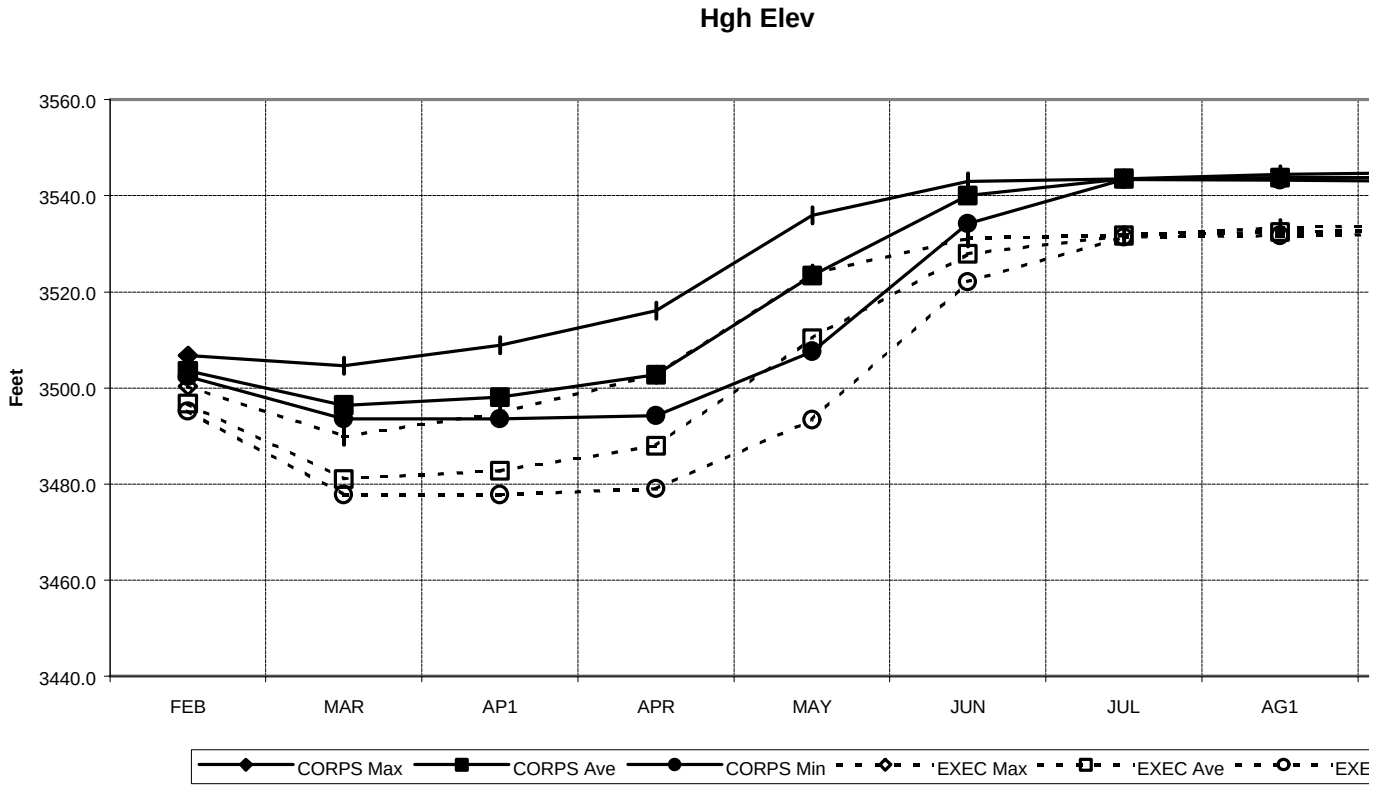
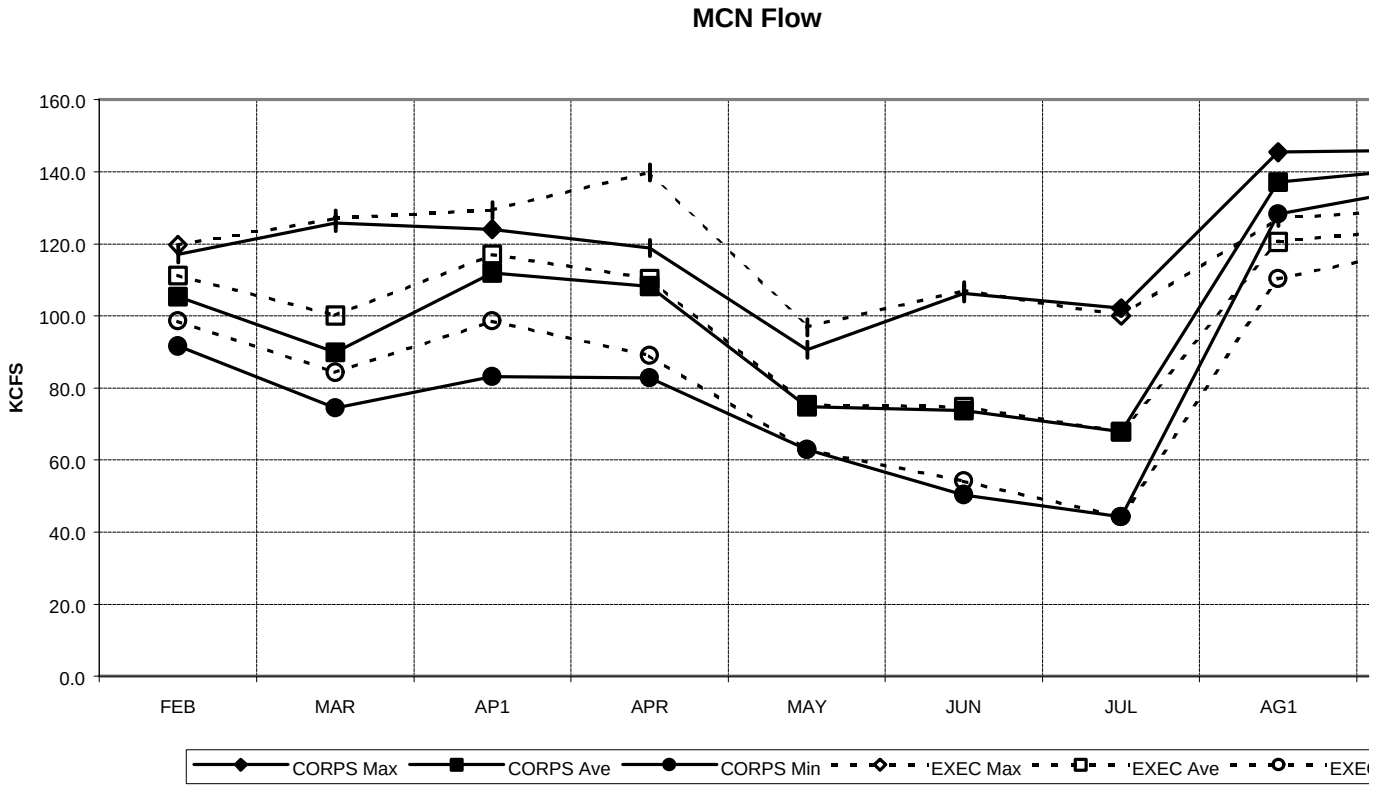
2300.0
2280.0
FEB
MAR
AP1
APR
MAY
JUN
JUL
AG1
CORPS Max
CORPS Ave
CORPS Min
'EXEC Max
'EXEC Ave
'EXE


Hgh Elev
3560.0
3540.0
3520.0
3500.0
3480.0
3460.0
3440.0
Feet
FEB
MAR
AP1
APR
MAY
JUN
JUL
AG1
CORPS Max
CORPS Ave
CORPS Min
'EXEC Max
'EXEC Ave
'EXE

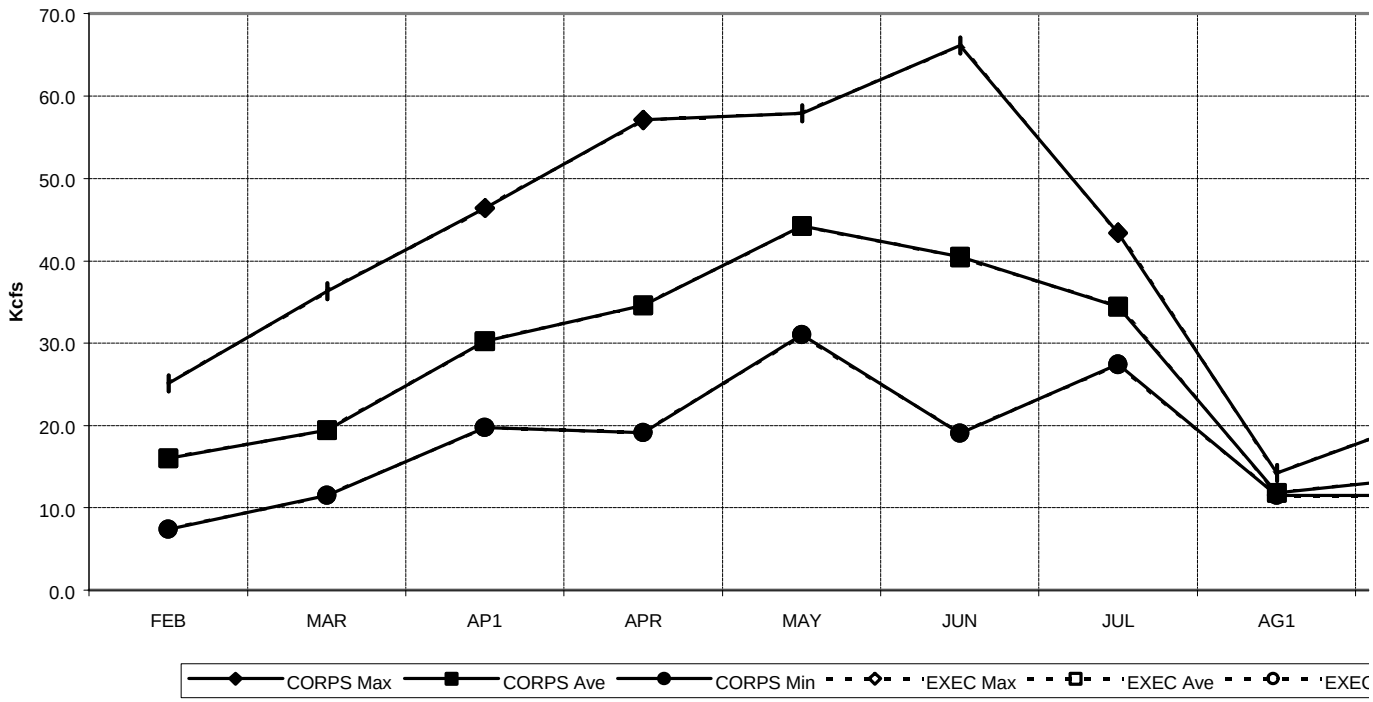
		FEB	MAR	AP1	APR	MAY	JUN	JUL	AG1	AUG
CORPS	Max	85.9	73.3	83.9	82.2	26.3	48.8	45.1	129.6	130.5
CORPS	Ave	80.5	61.5	68.2	64.0	18.4	20.2	26.4	120.1	123.4
CORPS	Min	77.0	55.4	45.8	38.0	9.3	8.6	15.7	110.4	110.9

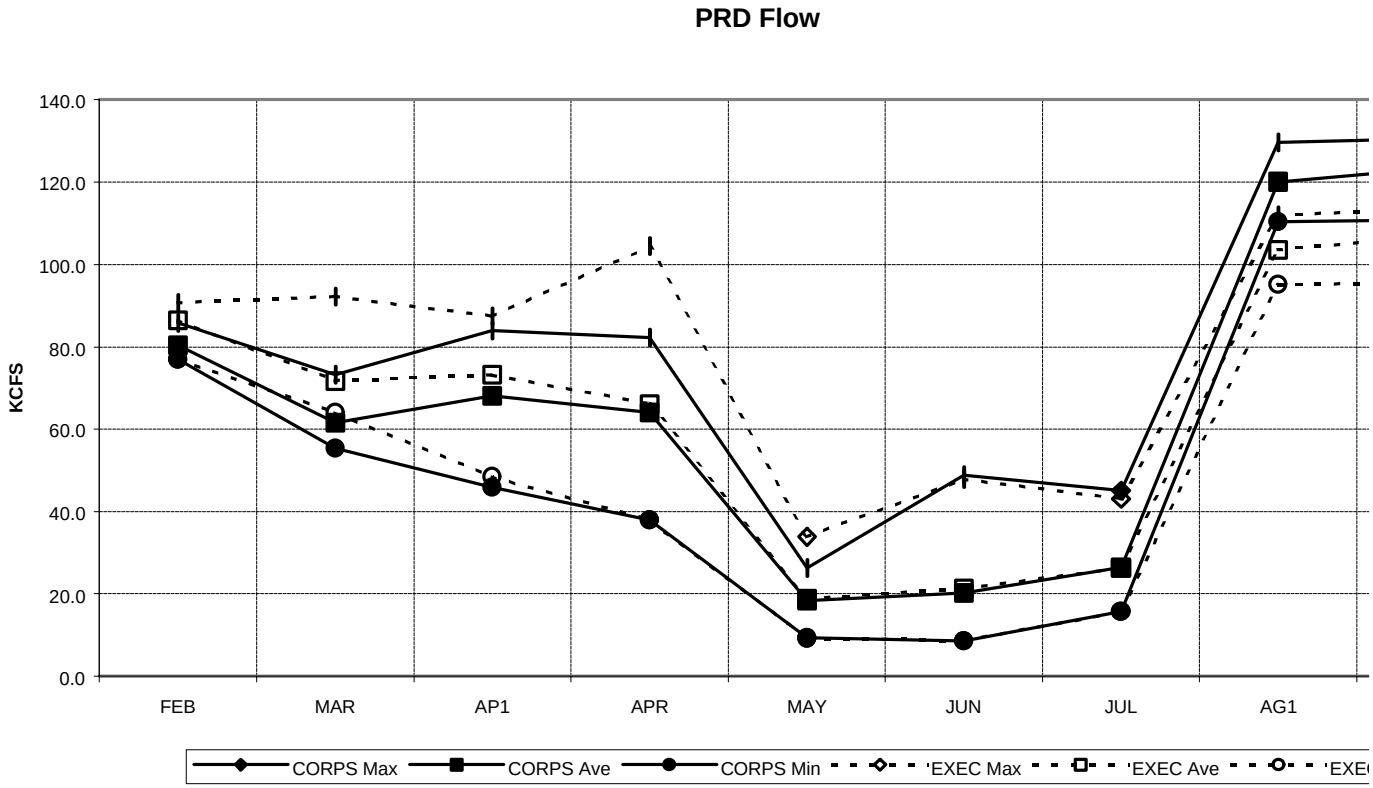
EXECUTIVE

		FEB	MAR	AP1	APR	MAY	JUN	JUL	AG1	AUG
EXEC	Max	90.7	92.2	87.4	104.4	33.8	47.8	43.1	111.9	113.7
EXEC	Ave	86.4	71.7	73.2	66.2	18.8	21.2	26.3	103.5	106.8
EXEC	Min	76.9	64.0	48.5	38.0	9.3	8.6	15.7	95.1	95.5


MCN Flow
KCFS
160.0
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
FEB
MAR
AP1
APR
MAY
JUN
JUL
AG1
CORPS Max
CORPS Ave
CORPS Min
EXEC Max
EXEC Ave

LWG Flow


70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Kcfs
FEB
MAR
AP1
APR
MAY
JUN
JUL
AG1
CORPS Max
CORPS Ave
CORPS Min
'EXEC Max
'EXEC Ave


PRD Flow
KCFS
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
FEB
MAR
AP1
APR
MAY
JUN
JUL
AG1
CORPS Max
CORPS Ave
CORPS Min
EXEC Max
EXEC Ave